

CLAIMS

1. An information recording medium on which an entire stream including a plurality of portion streams, each of which comprises a series of content information, is multiplexed-and-recorded by a unit of packet, which is a physically accessible unit, said information recording medium comprising:

an object data file, which is a logically accessible unit, for storing object data which comprises a plurality of packets, each storing therein a piece of the content information;

a reproduction sequence information file for storing reproduction sequence information which defines a reproduction sequence of the object data stored in said object data file; and

an object information file for storing, as reproduction control information for controlling the reproduction of said object data file, correspondence definition information which defines a correspondence relationship between a plurality of packets multiplexed on a time axis and the plurality of portion streams,

said object data file being multiplexed by the unit of packet and being recorded in a first area on said information recording medium,

said object information file being not multiplexed by the unit of packet and being recorded in a second area which is different from the first area on said information recording medium.

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2. The information recording medium according to claim 1,

wherein

said object data file includes a plurality of object data recorded on the basis of interpretation rules which mutually differ with regard to the correspondence relationship and

5 the correspondence definition information defines the correspondence relationship on the basis of interpretation rules which are unified among the plurality of object data.

3. The information recording medium according to claim 1 or 2,
10 wherein the entire stream includes two or more portion streams, each comprising video information as the series of content information.

4. An information recording apparatus for multiplexing and
15 recording an entire stream including a plurality of portion streams, each of which comprises a series of content information, onto an information recording medium by a unit of packet, which is a physically accessible unit, said information recording apparatus comprising:

20 a first recording device for recording an object data file, which is a logically accessible unit, for storing object data which comprises a plurality of packets, each storing therein a piece of the content information;

 a second recording device for recording a reproduction
25 sequence information file for storing reproduction sequence information which defines a reproduction sequence of the object

data stored in said object data file; and

a third recording device for recording an object information file for storing, as reproduction control information for controlling the reproduction of said object data file, correspondence definition information which defines a correspondence relationship between a plurality of packets multiplexed on a time axis and the plurality of portion streams,

said first recording device multiplexing said object data file by the unit of packet and recording it in a first area on said information recording medium,

said third recording device not multiplexing said object information file by the unit of packet and recording it in a second area which is different from the first area on said information recording medium.

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5. The information recording apparatus according to claim 4, wherein

the entire stream comprises at least one portion of a transport stream of MPEG 2 which is digitally transmitted and broadcasted and is received at a set top box and

said first recording device records said object data file such that one correspondence definition information, which defines the correspondence relationship included in the received entire stream, is included in one portion of the object data in the multiplexed form with the content information.

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6. An information recording method of multiplexing and recording an entire stream including a plurality of portion streams, each of which comprises a series of content information, onto an information recording medium by a unit of packet, which is a physically accessible unit, said information recording method comprising:

a first recording process of recording an object data file, which is a logically accessible unit, for storing object data which comprises a plurality of packets, each storing therein a piece of the content information;

a second recording process of recording a reproduction sequence information file for storing reproduction sequence information which defines a reproduction sequence of the object data stored in said object data file; and

a third recording process of recording an object information file for storing, as reproduction control information for controlling the reproduction of said object data file, correspondence definition information which defines a correspondence relationship between a plurality of packets multiplexed on a time axis and the plurality of portion streams,

said first recording process multiplexing said object data file by the unit of packet and recording it in a first area on said information recording medium,

said third recording process not multiplexing said object information file by the unit of packet and recording it in a second area which is different from the first area on said information

recording medium.

7. The information recording method according to claim 6, wherein

5 the entire stream comprises at least one portion of a transport stream of MPEG 2 which is digitally transmitted and broadcasted and is received at a set top box and

said first recording process records said object data file such that one correspondence definition information, which defines the
10 correspondence relationship included in the received entire stream, is included in one portion of the object data in the multiplexed form with the content information.

8. An information reproducing apparatus for reproducing at
15 least one portion of the recorded entire stream from said information recording medium according to claim 1 or 2, said information reproducing apparatus comprising:

a reading device for physically reading information from said information recording medium; and

20 a reproducing device for reproducing the object data by demultiplexing for the information read by said reading device from the first area on the basis of the reproduction control information and the reproduction sequence information included in the information read by said reading device from the second area.

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9. The information reproducing apparatus according to claim 8,

wherein said reproducing device demultiplexes such that a packet corresponding to one or a plurality of portion streams that are reproduction objects out of the plurality of packets multiplexed is extracted in accordance with the correspondence definition
5 information included in the information read by said reading device.

10. An information reproducing method of reproducing at least one portion of the recorded entire stream from said information recording medium according to claim 1 or 2, said information
10 reproducing method comprising:

a reading process of physically reading information from said information recording medium; and

a reproducing process of reproducing the object data by demultiplexing for the information read by said reading process
15 from the first area on the basis of the reproduction control information and the reproduction sequence information included in the information read by said reading process from the second area.

11. The information reproducing method according to claim 10,
20 wherein said reproducing process demultiplexes such that a packet corresponding to one or a plurality of portion streams that are reproduction objects out of the plurality of packets multiplexed is extracted in accordance with the correspondence definition information included in the information read by said reading
25 process.

12. An information recording and reproducing apparatus for recording the entire stream onto and reproducing at least one portion of the recorded entire stream from said information recording medium according to claim 1 or 2, said information
5 recording and reproducing apparatus comprising:

a first recording device for recording said object data file;

a second recording device for recording said reproduction sequence information file;

a third recording device for recording said object information
10 file;

a reading device for physically reading information from said information recording medium; and

a reproducing device for reproducing the object data by demultiplexing for the information read by said reading device from
15 the first area on the basis of the reproduction control information and the reproduction sequence information included in the information read by said reading device from the second area.

13. An information recording and reproducing method of
20 recording the entire stream onto and reproducing at least one portion of the recorded entire stream from said information recording medium according to claim 1 or 2, said information recording and reproducing method comprising:

a first recording process of recording said object data file;

25 a second recording process of recording said reproduction sequence information file;

a third recording process of recording said object information file;

a reading process of physically reading information from said information recording medium; and

5 a reproducing process of reproducing the object data by demultiplexing for the information read by said reading process from the first area on the basis of the reproduction control information and the reproduction sequence information included in the information read by said reading process from the second area.

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14. A computer program for controlling record which controls a computer provided in said information recording apparatus according to claim 4 or 5 and which causes the computer to function as at least one portion of said first recording device, said second
15 recording device, and said third recording device.

15. A computer program for controlling reproduction which controls a computer provided in said information reproducing apparatus according to claim 8 or 9 and which causes the computer
20 to function as at least one portion of said reproducing device.

16. A computer program for controlling record and reproduction which controls a computer provided in said information recording apparatus according to claim 12 and which causes the computer to
25 function as at least one portion of said first recording device, said second recording device, said third recording device, and said

reproducing device.

17. A data structure including a control signal, in which an entire stream including a plurality of portion streams, each of which
5 comprises a series of content information, is multiplexed by a unit of packet, which is a physically accessible unit, having:

an object data file, which is a logically accessible unit, for storing object data which comprises a plurality of packets, each storing therein a piece of the content information;

10 a reproduction sequence information file for storing reproduction sequence information which defines a reproduction sequence of the object data stored in said object data file; and

an object information file for storing, as reproduction control information for controlling the reproduction of said object data file,
15 correspondence definition information which defines a correspondence relationship between a plurality of packets multiplexed on a time axis and the plurality of portion streams,

said object data file being multiplexed by the unit of packet and being recorded in a first area on said information recording
20 medium,

said object information file being not multiplexed by the unit of packet and being recorded in a second area which is different from the first area on said information recording medium.